Laboratories and Testbeds

Carlos I. Calle, Ph.D.

National Aeronautics and Space Administration

Labs & Testbeds Complex

John F. Kennedy Space Center

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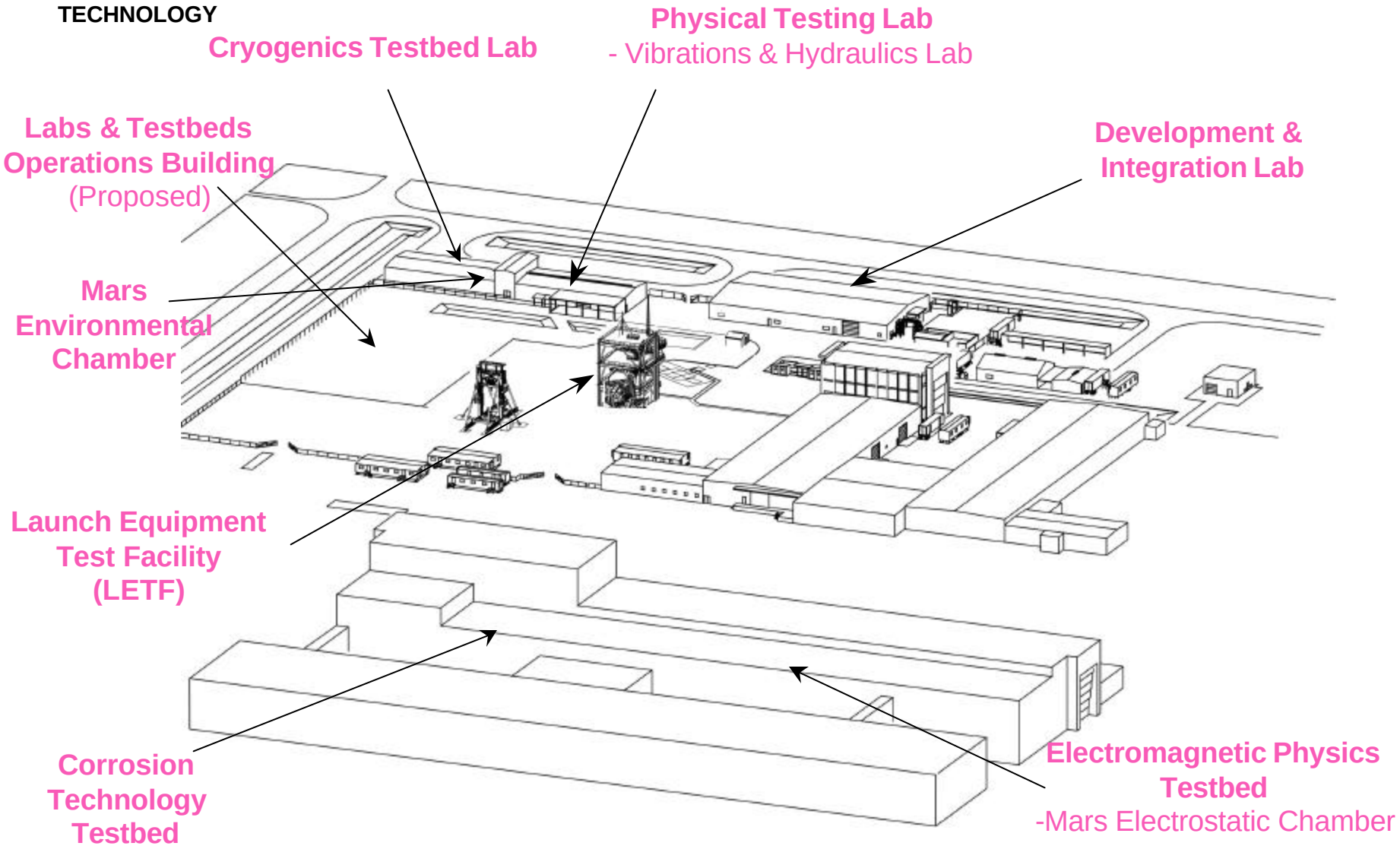

Cryogenics Testbed

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The Cryogenics Testbed is used to develop new cryogenic technology and test cryogenic materials through the use of state-of-the-art equipment.

Current work at the Cryogenics Testbed includes:

- Cryogenic Insulation Systems Development
- Cryogenic Flow Testing and Analysis
- Conceptual Design and Prototype Construction
- High Vacuum and Leak Detection
- Cryogenic Process Systems Design and Testing

Facilities include:

- Cryogenic Test Laboratory / Flow Test Area
- Launch Equipment Test Facility
- Development Integration Laboratory

Launch Environments Testbed

The Launch Systems Testbed provides the capability to perform scaled testing and development of launch systems subjected to the moving rocket exhaust plume environment.

Current Launch Systems Testbed Work:

- Shell Vibroacoustic Response to Random Loads Research
- Scaled Moving Cold Jet Test Facility Development
- EELV Low Frequency Vibration Environments Prediction
- Establishing Collaborative Organization of NASA, Academia, and Industry Partners to Support Specialized Testbed Development Needs

Facilities:

- Vibration Laboratory
- Development Test Complex

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Corrosion Technology Testbed

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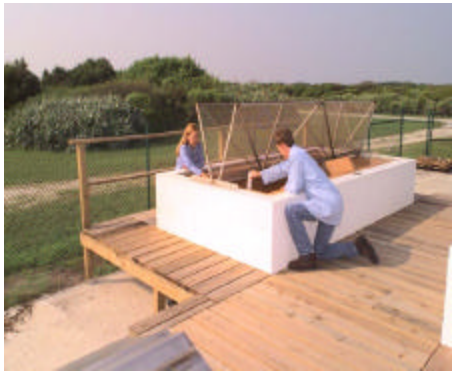
The Corrosion Technology Testbed is outfitted with state-of-the-art equipment to develop new corrosion control technologies and to investigate, evaluate, and determine material behavior in many different corrosive environments.

Current Projects:

- Evaluation of chrome-free coatings for corrosion protection of booster aft skirts.
- Protection of reinforced concrete in an ocean environment.
- Pitting corrosion of metal alloys for tubing products.
- Galvanic corrosion studies of aerospace structures.
- Environmentally compliant coating studies for flight hardware (SRB's, Shuttle, ET, etc.).

Facilities include:

- Electrochemistry laboratory
- Accelerated corrosion equipment
- Coatings application laboratory
- Atmospheric exposure site
- Seawater immersion system



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Electromagnetic Physics Testbed

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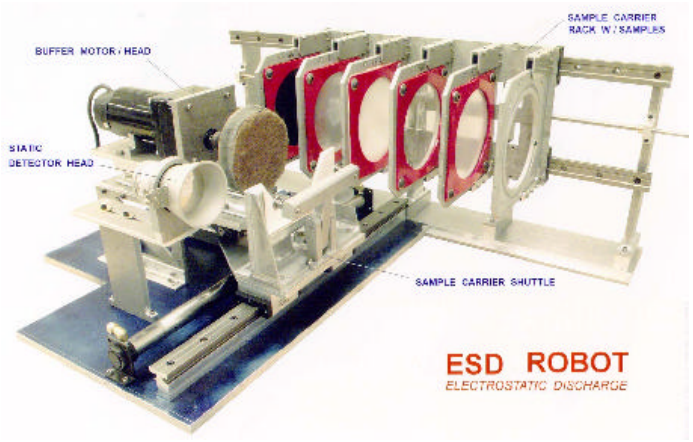
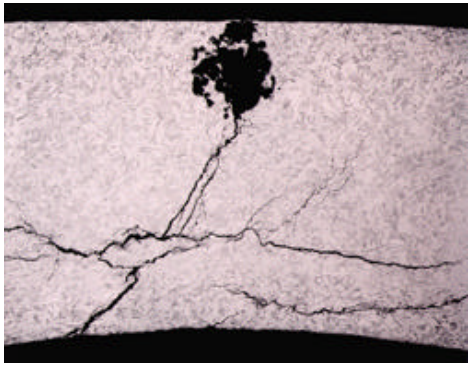
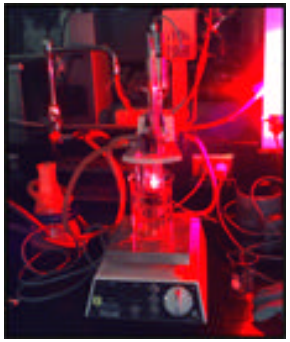


- Electrostatics studies and materials characterization to assist in issues related to electrostatic charge generation and prevention in the shuttle, international space station, and payload work areas.
- Development, Testing, and Calibration of Electrostatic Instrumentation for Planetary Missions (JPL collaboration).
- Electrostatic characterization of Mars and Lunar simulant soils and their interaction with different materials under simulated environmental conditions.
- Facilities:
  - Mars Electrostatic Chamber
    - 0.3 mb to 1013 mb
    - -123 ^{o}C to +200 ^{o}C
  - Dust and Sand Delivery Mechanisms
  - Automated Triboelectric Equipment

Materials Test and Evaluation Laboratories





Kennedy Space Center has unique facilities and extensive expertise for failure analysis, testing, and re-engineering materials used in nearly every commercial and aerospace industry. State-of-the-art capabilities include:

- Chemical Analysis
- Materials Testing
- Environmental Simulation and Testing
- NDE

Conclusions

- KSC's Testbeds and Labs have unique facilities that could be used to support current and future R&D collaborations with JPL.
- Current collaborations have been extremely beneficial to KSC and JPL.
- Technical personnel at both centers are eager to engage in these efforts.

- Contacts:
  - Laboratories and Testbeds Division: Tim Bollo (Timothy.Bollo-1@ksc.nasa.gov)
  - Testbeds & Development Branch: Karen Thompson (Karen.Thompson-1@ksc.nasa.gov)
  - Cryogenics Testbed: James Fesmire (James.Fesmire-1@ksc.nasa.gov)
  - Launch Environments Testbed: Raoul Caimi (Raoul.Caimi-1@ksc.nasa.gov)
  - Corrosion Technologies Testbed: Dr. Luz Marina Calle (Luz.Calle-1@ksc.nasa.gov)
  - Electromagnetic Physics Tesbed: Dr. Carlos Calle (Carlos.Calle-1@ksc.nasa.gov)